DOCUMENT RESUME

ED 081 872 UD 013 788

AUTHOR Wilson, Milton P.

TITLE Reading and Mathematics Instruction for Low-Achieving Students: A Report on Demonstration Programs in Intensive Instruction in Reading and Mathematics, 1971-72.

INSTITUTION California State Dept. of Education, Sacramento. Bureau of Compensatory Education Evaluation and Research.

SPONS AGENCY California State Board of Education, Sacramento.

PUB DATE 73

NOTE 71p.

EDRS PRICE MF-$0.65 HC-$3.29

DESCRIPTORS *Compensatory Education Programs; *Demonstration Programs; Disadvantaged Youth; Individualized Instruction; Instructional Programs; *Junior High School Students; Learning Laboratories; Low Income; Mathematics Instruction; Program Administration; Program Development; Program Evaluation; Reading Instruction; *Teaching Methods

IDENTIFIERS *California

ABSTRACT

The purpose of the demonstration programs in intensive instruction for low-achieving students was essentially to enable school districts to establish and operate exemplary and innovative projects to improve the competence of junior high school students in reading and mathematics. Thirteen original projects moved into their third year of operation during 1971-72 and five new "replication" projects began operation during the year. The students in these effective demonstration programs showed a rate of achievement reached in few compensatory education programs anywhere in the nation. These programs were designed with the goal of raising the performance level of these students to reflect a normal distribution of achievement. This objective was achieved in almost all cases. The few programs that were not successful were terminated. The programs were unique in many ways. They were planned and developed by the staff of each participating school. The principal, the project director, and a carefully selected staff of teachers, aides, and volunteers made decisions at the school level. Students with varying abilities were grouped together heterogeneously. They were usually taught individually or in groups of two or three at least part of each day by the teachers and assistants. In most programs, each student spent some time each week in a learning laboratory where he worked with highly trained teachers and assistants in specific learning activities designed especially for him. Curriculum was developed and prescribed as needed and was based upon a careful diagnosis of learning disabilities. An emphasis on success was the key to the program. (Author/JM)

ED 081872

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

Reading and Mathematics Instruction for Low-Achieving Students

A Report on Demonstration Programs in Intensive Instruction in Reading and Mathematics, 1971-72

Prepared for the

CALIFORNIA STATE BOARD OF EDUCATION

UD 013788

California State Department of Education • Wilson Riles, Superintendent of Public Instruction • Sacramento 1973

FILMED FROM BEST AVAILABLE COPY

Reading and Mathematics Instruction for Low-Achieving Students

A Report on Demonstration Programs in Intensive Instruction in Reading and Mathematics, 1971-72

Prepared for the

CALIFORNIA STATE BOARD OF EDUCATION

Prepared under the direction of the

OFFICE OF PROGRAM EVALUATION AND RESEARCH

and the

DIVISION OF COMPENSATORY EDUCATION

This publication, which was funded under provisions of Title V of the Elementary and Secondary Education Act, was published by the California State Department of Education, 721 Capitol Mall, Sacramento, CA 95814, and distributed under the provisions of the Library Distribution Act.

1973

PREFACE

An annual evaluation of California's demonstration programs in reading and mathematics is required by Education Code Section 6497. The Bureau of Compensatory Education Evaluation and Research has the responsibility for evaluating and disseminating information to school districts and other interested parties on the results of the demonstration programs. This report is on the demonstration programs in intensive instruction in reading and mathematics conducted during 1971-72.

The demonstration programs were conducted in those schools which had the greatest need for such programs in terms of previous educational failure and lack of hope. The programs were established with the expectation that the academic achievement of low-achieving students might be improved. In the effective demonstration programs, the students showed a rate of achievement reached in few compensatory education programs anywhere in the nation.

Major responsibility for the preparation of the state report was assumed by Milton P. Wilson, Consultant in the Bureau of Compensatory Education Evaluation and Research.

MANUEL V. CEJA, Acting Chief
Division of Compensatory Education

ALEXANDER I. LAW, Chief
Office of Program Evaluation
and Research

J. VINCENT MADDEN, Chief
Compensatory Education Evaluation
and Research

CONTENTS

	PREFACE	iii
I.	OVERVIEW OF THE DEMONSTRATION PROGRAM	1
II.	IMPLEMENTATION OF THE PROGRAMS	5
	Original Demonstration Projects	6
	New Replication Projects	6
III.	RECOMMENDATIONS REGARDING THE PROGRAMS	9
IV.	EVALUATION OF THE DEMONSTRATION PROJECTS	15
	Original Demonstration Projects	15
	Program Development	15
	Profile of the Most Effective Projects	16
	Profile of the Least Effective Projects	18
	Waivers of Education Code Provisions	18
	Student Achievement	19
	Cost Analysis	23
	Expenditures Per Student	23
	Cost Effectiveness	25
	Combined Rank Order Rating of Projects	26
	Replication Projects	27
	Program Development	27
	Waivers of Education Code Provisions	27
	Student Achievement	28
	Cost Analysis	29
	Expenditures Per Student	30
	Cost Effectiveness	30
	Combined Rating of Replication Projects	31

		Page
V.	EVALUATION RESULTS	33
	Original Demonstration Projects	33
	Replication Projects	35
	APPENDIX A: STATISTICAL DATA	
	Table	
1	Rating of Demonstration Projects on Program Development, Spring 1972	37
2	Rank Order of Demonstration Projects on Mean Achievement Gains, Grade Nine, 1971-72	38
3	Rank Order of Demonstration Projects on Increase in Achievement Scores over Expected Gains, 1970-72	39
4	Rank Order of Demonstration Projects on Increase in Achievement Scores over Initial Pretest Scores, 1970-72	40
5	Rank Order of Demonstration Projects on Annual Longitudinal Gains During Three Years, 1969-72	41
6	Rank Order of Demonstration Projects on Overall Longitudinal Gains over Three Years, 1969-72	42
7	Rank Order of Demonstration Projects in Reducing the Gap Between Grade-Level Achievement and Mean Achievement Scores Obtained, 1970-72	43
8	Summary of Achievement Ratings, Demonstration Projects, Spring, 1972	44
9	Rank Order of Demonstration Projects on Expenditures per Student for Operating Expenses, May 31, 1972	45
10	Rank Order of Demonstration Projects on Expenditures per Student for Certificated Salaries, May 31, 1972	46
11	Rank Order of Demonstration Projects on Expenditures per Student for Classified Salaries, May 31, 1972	47
12	Rank Order of Demonstration Projects on Expenditures per Student for Research and Development, May 31, 1972	48

Table		Page
13	Rank Order of Demonstration Projects on Total Expenditures per Student, May 31, 1972	49
14	Demonstration Project Operating Costs per Student Compared to District Operating Costs per A.D.A., 1971-72	50
15	Cost Effectiveness (C/E) Index Ratings and Rank Order of Demonstration Projects on Cost Effectiveness, Spring, 1972	51
16	Rank Order Rating of Demonstration Projects on Overall Effectiveness, July, 1972	52
17	Rating of Replication Projects on Program Development, Spring, 1972	53
18	Mean Achievement Gains Shown by Grade Seven Replication Projects During 1971-72	53
19	Mean Increase in Achievement Scores over Expected Gains Shown by Replication Projects, 1971-72	54
20	Mean Increase in Achievement Scores over Initial Pretest Scores in Replication Projects, 1971-72	55
21	Reduction in the Gap Between Grade-Level Achievement and Mean Achievement Scores Obtained in Replication Projects, 1971-72	56
22	Summary of Achievement Ratings, Replication Projects, Spring, 1972	57
23	Replication Project Expenditures per Student, 1971-72	58
24	Replication Project Operating Costs per Student Compared to District Operating Costs per A.D.A., 1971-72	59
25	Cost Effectiveness (C/E) Ratings of Replication Projects, 1971-72	60
26	Rating of Replication Projects on Overall Effectiveness, 1971-72	61

APPENDIX B: EDUCATION CODE SECTIONS ON THE SUBJECT OF DEMONSTRATION PROGRAMS 62

I. OVERVIEW OF THE DEMONSTRATION PROGRAM

The California State Board of Education and the California State Department of Education are creating many accountable educational programs throughout the state. The projects described in this report -- a report required by Education Code Section 6497 -- are evidence of a model of accountability.

Assembly Bill 938 of the 1969 Legislature enacted into law Chapter 1596, Statutes of 1969, which authorized the Division of Compensatory Education to establish demonstration programs in intensive reading and mathematics instruction that would improve the academic achievement of low-achieving students and be cost effective. Demonstration programs were established in the schools that had the greatest need for such programs in terms of previous educational failure and lack of hope. These were 17 of the poorest schools in California with respect to their students' socioeconomic status and academic achievement.

The students in these effective demonstration programs showed a rate of achievement reached in few compensatory education programs anywhere in the nation. These programs were designed with the goal of raising the performance level of these students to reflect a normal distribution of achievement. This objective was achieved in almost all cases. The few programs that were not successful were terminated.

The programs were unique in many ways. They were planned and developed by the staff of each participating school. The principal, the project director, and a carefully selected staff of teachers, aides, and volunteers made decisions at the school level. Students with varying abilities were grouped together heterogeneously. They were usually taught individually or in groups of two

or three at least part of each day by the teachers and assistants. In most programs, each student spent some time each week in a learning laboratory where he worked with highly trained teachers and assistants in specific learning activities designed especially for him.

Curriculum was developed and prescribed as needed and was based upon a careful diagnosis of learning disabilities. An emphasis on success was the key to the program. The students were made aware of their successes rather than criticized for their failures. Sensing the high expectations that were held for them, the students were motivated to learn.

The program attempted to remove any obstacles that might hinder learning; for example, certain laws and regulations could be waived if their provisions seemed to interfere with an innovative program.

Another unique feature of the program was that, unlike most other state or federal programs, those programs that were considered to be the least effective were terminated. Funds from terminated programs were used to replicate cost-effective programs in other schools within districts that had already conducted successful programs and in other eligible districts throughout California.

The demonstration programs began in grade seven in 1969-70, continued with the same students in grade eight in 1970-71, and in grade nine in 1971-72. All eligible students at the appropriate grade levels in each project were served. As the state-funded programs moved from one grade to the next, the school districts established similar programs for incoming students in the grade no longer being served by the original programs. Because of the success of their demonstration program, several districts have begun similar programs in additional junior high schools within their districts,

generally with tremendous impact on traditional instructional programs in reading and mathematics.

II. IMPLEMENTATION OF THE PROGRAMS

The purpose of the demonstration programs in intensive instruction for low-achieving students was essentially to enable school districts to establish and operate exemplary and innovative projects to improve the competence of junior high school students in reading and mathematics. Thirteen original projects moved into their third year of operation during 1971-72, and five new "replication" projects began operation during the year.

The original demonstration projects served grade nine students in the following districts:

District	School	Instruction	Number of Students
Colton Joint Unified	Colton High	Reading/Math	600
El Monte Union High	El Monte High	Reading	88
Fresno City Unified	Irwin Junior High	Reading/Math	264
Long Beach Unified	Franklin Junior High	Math	200
Los Angeles Unified	Edison Junior High	Reading/Math	574
Los Angeles Unified	Pacoima Junior High	Reading/Math	657
Oakland City Unified	Hoover Junior High	Reading/Math	145
Pasadena Unified	Pasadena High	Math	460
Riverside Unified	Central Junior High	Reading/Math	225
San Diego City Unified	Memorial Junior High	Reading	425
San Francisco Unified	Benjamin Franklin Junior High	Reading	220
San Jose Unified	Lincoln High	Reading/Math	205
Santa Barbara City High	Santa Barbara Junior High	Reading	440

The five replication projects were initiated at the grade seven level in these districts:

District	School	Instruction	Number of Students
Long Beach Unified	Lindbergh Junior High	Math	360
Oakland City Unified	Woodrow Wilson Junior High	Reading/Math	220
San Diego City Unified	Gompers Junior High	Reading	288
San Francisco Unified	Pelton Junior High	Reading	346
Santa Barbara City High	La Cumbre Junior High	Reading	465

Original Demonstration Projects

The original demonstration projects were limited to students in grade nine attending schools located in low-income areas. Participants were educationally disadvantaged students who would otherwise find difficulty in achieving success in high school.

Project proposals were required to state specific goals in student achievement and to show a level of cost effectiveness that would make it possible for similar school districts throughout California to adapt the projects to their needs. Projects that proved least effective were to be terminated.

The most effective demonstration projects in reading were those in San Francisco, San Jose, Colton, Oakland, Riverside, El Monte, and Los Angeles (Edison Junior High School). The most effective mathematics projects were in Los Angeles (Pacoima Junior High School), Colton, Long Beach, San Jose, and Riverside.

Effective demonstration projects in reading included those in Santa Barbara and Fresno. Effective mathematics projects were implemented in Oakland and Los Angeles (Edison).

The least effective demonstration projects during 1971-72 were the reading projects in San Diego and Los Angeles (Pacoima) and the mathematics projects in Pasadena and Fresno.

New Replication Projects

Since only the most successful projects were recommended for funding again at the end of 1970-71, funds were available for 1971-72 to replicate some of the most effective models. Each district with a successful project was

invited to submit a request for funds to replicate that project in another eligible junior high school within the district. Eight districts submitted applications, and funds were available to implement five replication projects during 1971-72.

This replication was an attempt to demonstrate that a successful project in one school could be duplicated successfully in another school within the district. To help insure that the successful features of the original models were replicated as closely as possible, the staff of each of the original demonstration projects worked cooperatively with the staff of each replicating school throughout 1971-72.

Exactly the same criteria were used in implementing the five replication projects as were used in selecting the original demonstration projects.

The most effective replication projects were those in San Francisco (reading), Long Beach (mathematics), and Oakland (reading and mathematics). The replication projects in Santa Barbara (reading) and San Diego (reading) were also very effective.

III. RECOMMENDATIONS REGARDING THE PROGRAMS

Considering the purpose of the programs as defined in Education Code Section 6490, evaluation criteria, and evaluation results, the following recommendations are offered regarding the demonstration program in reading and mathematics:

1. Demonstration programs in the following districts should be retained and extended; they should be commended as most effective; and efforts should be directed toward greater demonstration and dissemination of information regarding their most innovative and exemplary cost-effective elements:

Reading Programs	Mathematics Programs
San Francisco Unified (Franklin)	Los Angeles Unified (Pacoima)
San Jose Unified	Colton Joint Unified
Colton Joint Unified	Long Beach Unified (Franklin)
Oakland City Unified (Hoover)	San Jose Unified
Riverside Unified	Riverside Unified
El Monte Union High School	
Los Angeles Unified (Edison)	

2. Replication programs in the following districts should be retained and continued; they should be commended as very effective; and efforts should be directed toward dissemination of information regarding their most successful and exemplary elements:

Reading Programs	Mathematics Programs
San Francisco Unified (Pelton)	Long Beach Unified (Lindbergh)
Oakland City Unified (Wilson)	Oakland City Unified (Wilson)
Santa Barbara City High School (La Cumbre)	
San Diego City Unified (Gompers)	

3. Effective demonstration programs in the following districts should be retained and strengthened, and efforts should be directed toward modifying

these programs to improve their cost effectiveness or increase their achievement gains:

Reading Programs	Mathematics Programs
Santa Barbara City High School (Santa Barbara)	Los Angeles Unified (Edison)
Fresno City Unified	Oakland City Unified (Hoover)

4. Demonstration programs in the following districts should be terminated as least effective for the reasons indicated:

San Diego City Unified (Memorial), reading project. The San Diego project rated the lowest of 11 reading projects in overall student achievement (rank order: 11). The project was below average on grade nine achievement gains, with seven months gain for six months instruction (rank order: 8). The project ranked second lowest on achievement gains obtained compared to gains expected, with an increase of 20 percent over expected scale-score increases (rank order: 10). San Diego rated next to last on achievement gains over initial scores, with an 11 percent increase (rank order: 10). The project ranked tenth in longitudinal gains over three years, with an average gain of 0.9 months per month of instruction in grades seven, eight, and nine. San Diego tied another project for lowest rating in "reducing the gap" between grade-level achievement and obtained grade-equivalent scores, with no reduction reported between October, 1970, and May, 1972; instead, there was an increase in the "gap" of 13 percent (rank order: 10.5). The project rated second lowest in cost effectiveness, with an index of 0.47, representing a 0.47 percent gain in achievement scores for each 1 percent increase in operating costs per student over average San Diego district costs (rank order: 10). Out of 11 reading projects, the San Diego project ranked eleventh in overall effectiveness.

Los Angeles Unified (Pacoima Junior High School), reading project only. The Pacoima reading project rated second lowest of 11 reading projects in overall student achievement (rank order: 10). The project was average on grade nine achievement gains, with 11 months gain for seven months instruction (rank order: 5). The project ranked lowest on achievement gains obtained compared to gains expected, with an increase of 2 percent over expected scale-score increases (rank order: 11). Pacoima rated lowest on achievement gains over initial scores, with a 10 percent increase (rank order: 11). The project ranked below average in annual longitudinal gains over three years, with an average gain of 1.4 months per month of instruction in grades seven, eight, and nine. Pacoima tied for lowest rating in "reducing the gap" between grade-level achievement and obtained grade-equivalent scores, with no reduction reported between October, 1970, and May, 1972; instead, there was an increase in the "gap" of 13 percent (rank order: 10.5). The project rated lowest in cost effectiveness, with an index of 0.14, representing a 0.14 percent gain in achievement scores for each 1 percent increase in operating costs per student over average Los Angeles district costs (rank order: 11). Out of 11 reading projects, the Pacoima project ranked tenth in overall effectiveness.

Pasadena Unified, mathematics project. The Pasadena project rated the lowest of nine mathematics projects in overall student achievement (rank order: 9). The project was second lowest on grade nine achievement gains, with four months gain for five months instruction (rank order: 8). The project ranked lowest on achievement gains obtained

compared to gains expected, with a decrease in scale scores of 23 percent below gains expected (rank order: 9). Pasadena rated last on achievement gains over initial scores, with an increase of 9 percent (rank order: 9). The project ranked lowest in total longitudinal gains during the three school years between February, 1970, and April, 1972, with a gain of four months for 22 months of instruction in grades seven, eight, and nine (rank order: 9). Pasadena rated lowest of all reading and mathematics projects in "reducing the gap" between grade-level achievement and obtained grade-equivalent scores, with no reduction reported between October, 1970, and May, 1972; instead, there was a "gap" increase of 80 percent (rank order: 9). The project rated lowest in cost effectiveness, with an index of -1.5, representing a 1.5 percent loss in achievement scores for each 1 percent increase in operating costs per student over average Pasadena district costs (rank order: 9). Out of nine mathematics projects, the Pasadena project ranked ninth in overall effectiveness.

Fresno City Unified, mathematics project only. The Fresno mathematics project rated third lowest of nine mathematics projects in overall student achievement (rank order: 7). The project was below average on grade nine achievement gains, with seven months gain for seven months instruction (rank order: 5). The project ranked third lowest on achievement gains obtained compared to gains expected, with an increase of 24 percent over expected scale-score increases (rank order: 7). Fresno rated below average on achievement gains over initial scores, with a 12 percent increase (rank order: 6). The project ranked below average in total longitudinal gains during the three school years between February, 1970, and May, 1972,

with a gain of 19 months for 17 months of instruction in grades seven, eight, and nine (rank order: 6). Fresno rated low in "reducing the gap" between grade-level mathematics achievement and obtained grade-equivalent scores, with no reduction reported between October, 1970, and May, 1972; instead, there was an increase of 4 percent in the "gap" (rank order: 6). The project rated third lowest in cost effectiveness, with an index of 0.86, representing a 0.86 percent gain in achievement scores for each 1 percent increase in operating costs per student over average Fresno district costs (rank order: 7). Out of nine mathematics projects, the Fresno project ranked seventh in overall effectiveness.

IV. EVALUATION OF THE DEMONSTRATION PROJECTS

Projects were continually reviewed by the Division of Compensatory Education regarding their effectiveness in improving the achievement level of students in reading and mathematics. Through reports, rating observations, and interviews, projects were evaluated on the basis of several criteria involving program development, student achievement, and cost analysis.

Program development criteria included the extent to which the projects adhered to the intent of the legislation and State Board of Education guidelines on eligibility, selection of participants, waivers, project organization and administration, program content, demonstration concepts, staff development, and dissemination of information.

Student achievement criteria included the extent to which the projects demonstrated effectiveness in improving student achievement levels.

Cost analysis criteria included the extent to which the projects accounted for component costs and demonstrated cost effectiveness.

Original Demonstration Projects

Program Development

It was decided that during 1971-72, the third continuous year of operation, the projects would not be formally evaluated on program development, but that the emphasis would be placed on student achievement and cost effectiveness.

To determine which program elements were most related to student achievement, however, the projects were rated on a 78-item evaluation rating scale based on the guidelines authorized by AB 938. The scale assessed the extent to which the projects adhered to guidelines on: (1) eligibility; (2) selection of participants;

(3) waivers; (4) organization; (5) project administration; (6) program content; (7) demonstration activities; (8) staff development; (9) dissemination of information; (10) component costs; (11) evaluation procedures; and (12) research design. Projects were compared and ranked according to point scores on this questionnaire. These ratings are given in Table 1.*

As indicated in Table 1, the programs in Santa Barbara, Colton, Long Beach, and El Monte were rated highest on program development; Los Angeles (Edison), Fresno, Los Angeles (Pacoima), and Pasadena were rated lowest.

Of the 78 items on the informal rating scale, 36 items distinguished those projects scoring highest from those projects scoring lowest in pupil achievement. The pattern of responses to those 36 questions gives a composite profile of the factors that tended to differentiate the most effective from the least effective demonstration programs during 1971-72.

Profile of the Most Effective Projects. In the most effective projects, the educational needs of the pupils and the assessment of those needs were described in detail. It was evident that the projects emphasized creativity.

Contrary to expectations, the most effective projects did not request many waivers of sections of the Education Code; they did not describe fully the location and nature of existing facilities, equipment, and supplies; and they did not submit complete descriptions of each personnel position related to the program.

The composite most effective project served about 250 students, less than 75 percent of the grade nine population of the school. The most general grouping practice used was heterogeneous groups. Instruction was mostly individualized.

***All tables referred to in this publication will be found in Appendix A.**

The project director was located at the school. Most of the project planning was done by the total program staff and resource personnel.

The most effective projects were clearly innovative. Their methods, techniques and procedures were described in detail and were clearly related to the program objectives. The demonstration aspects of the program were seen as exemplary by other districts, their opportunities for observation were well planned and built in. There inservice education program was continuous and mandatory. The inservice programs were clearly related to the objectives of the projects, with schedules and calendars described in the proposals. Each staff was considered outstanding or excellent. Each program was innovative and unique. Provisions were made for dissemination of information through publications, observations, and other methods.

Even in the most effective projects, comparison groups were usually described poorly.

The most effective projects showed a level of cost-effectiveness very adaptable by similar school districts. Fiscal details were complete, and costs were clearly identified. It was clearly demonstrated that the districts could maintain the program at the close of the project, and strong intent was shown to do so.

In the most effective projects, the average cost per pupil during the year was from $500 to $750; the average increase in achievement was 16 months or more; the calculated cost per pupil per month of growth was less than $25. The relationships between the programs, evaluation, project objectives, and expenditures were clearly indicated. The programs were very effective in improving the achievement level of pupils. Their level of cost effectiveness was best described as effective.

Profile of the Least Effective Projects. In the least effective projects, the educational needs of the pupils and the assessment of those needs were poorly described. It was not evident that the project emphasized creativity.

Contrary to expectations, the least effective projects did request many waivers of sections of the Education Code; they did describe fully the location and nature of existing facilities, equipment, and supplies; they did submit complete descriptions of each personnel position related to the program.

There were about 350 students included in the program, more than 75 percent of the ninth grade population of the school. The most general grouping practice used was homogeneous groups. Instruction was only slightly individualized. The project director was not located at the school. Most of the project planning was done by administrators other than the program staff.

The least effective projects were neither innovative or exemplary. Their methods, techniques, and procedures were poorly described, and were only vaguely related to the program objectives. The demonstration centers of the program were visited by school personnel in the district, but not very often by outsiders. Opportunities for observation were fair or very poor. Their inservice education program was neither continuous nor mandatory. The inservice programs were somewhat related to the objectives of the project, but no schedule or calendar was described in the proposal. Their staffs were considered fair or good. The programs were better than routine, but not unique or innovative. Provisions for the dissemination of information usually omitted publications, observations, or other methods.

In the least effective projects, comparison groups were not used or described.

The least effective projects showed a level of cost effectiveness not adaptable by similar school districts. Fiscal details were barely adequate, and costs were fairly well identified. It was often uncertain that the districts could maintain the program at the close of the project, and only slight intent was shown to do so.

In the least effective projects, the average cost per pupil during the year was from $250 to $500; the average increase in achievement was zero to five months; the calculated cost per pupil per month of growth was more than $75. The relationships between the programs' evaluation, project objective, and expenditures were vaguely indicated. The programs were not effective in improving the achievement level of pupils. Their level of cost effectiveness was best described as not effective.

Waivers of Education Code Provisions

Regulations permitted the demonstration projects to request a waiver of any section of the Education Code in order to allow each district to implement a more exemplary and innovative program. Three waivers were granted during 1971-72. One waiver was granted to all projects to extend the duration of their project year. Waivers of several sections of the Education Code related to the mandatory use of credentialed teachers were granted to two projects.

All projects were granted a waiver of Education Code Section 17199 pertaining to the duration of the project year. All projects were granted an extension from June 30 to August 31, 1972, to allow them time for the completion of their evaluation reports and the preparation of dissemination materials. This waiver had no effect upon student achievement, as it was an evaluation and dissemination activity which took place after the instructional year had been completed.

Two projects were granted waivers of various sections of the Education Code pertaining to the mandatory use of certificated personnel for teaching and supervising students (sections 11251, 13251, 13252, 13301, and 13511). These projects were in San Jose and Santa Barbara (Santa Barbara Junior High School) and had a combined enrollment of 645 participants. Whether or not these waivers had a positive effect upon the reading or mathematics achievement of the participating students depended on the degree to which the instructional flexibility that such waivers permitted was actually implemented. Of the two projects granted such waivers, only one (San Jose) showed achievement ratings that were above the average of all projects in reading skills. Neither was above average in mathematics.

In general, the granting of requests for waivers of pertinent sections of the Education Code did not guarantee that such a waiver would automatically result in more effective, exemplary, or innovative programs. In fact, a comparison of the profiles of the most effective and the least effective projects reveals that the four projects scoring highest in student achievement did not request many waivers; the four projects scoring lowest in achievement requested more waivers of sections of the Education Code.

Student Achievement

The main purpose of the demonstration programs was to improve student achievement. The main focus of evaluation, therefore, was on results in terms of pupil performance.

Standardized test results, as reported for each project, were tabulated and compared to show increases in achievement in reading and mathematics.

Achievement was measured by the Comprehensive Test of Basic Skills (CTBS), Levels 3 and 4, Forms Q and R. These were administered as the pre- and post-test in all projects. Each project reported separately for reading and mathematics.

In consideration of recommendations from project personnel, it was decided that achievement results should be analyzed in several ways rather than only months of gain per month of instruction. A more comprehensive analysis of project achievement results was necessary this year in order to answer the following questions:

What achievement gains were shown in grade nine only?
How did achievement gains obtained compare with gains expected, based upon initial pretest scores?
How much increase in achievement was reported over initial pre-test scores?
What achievement gains were reported for students in the program for three years?
How successful were the projects in closing the gap between grade-level performance and average obtained achievement levels?

To answer these questions, achievement results were analyzed in six different ways, as follows:

1. Achievement increases were expressed in terms of months of gain in mean grade placement for each month of instruction in grade nine during 1971-72. (See Table 2.)

As shown in Table 2, projects rated highest in grade nine reading gains were San Francisco, Oakland, and San Jose; projects reporting lowest grade nine reading gains were Colton, Fresno, and Santa Barbara. In mathematics, the projects rated highest in grade nine achievement gains were Los Angeles (Pacoima), Long Beach, and Los Angeles (Edison); mathematics projects showing the lowest achievement gains in grade nine were Colton, Pasadena, and Riverside.

2. Achievement gains obtained were compared to gains expected, expressed as percent of scale-score increases above expected increases, from October, 1970, to May, 1972. Expected gains were predicted from pretest scale scores. (See Table 3.)

Table 3 shows that the projects with the greatest two-year increase in reading scores above expected gains were San Francisco, Colton, and San Jose; projects with the least increase in reading included Los Angeles (Pacoima), San Diego, and Santa Barbara. Projects reporting the highest two-year increases in mathematics scores were Los Angeles (Pacoima), Colton, and Long Beach; lowest mathematics gains in comparison to expectancy were in Pasadena, Los Angeles (Edison), and Fresno.

3. Achievement gains were expressed as the percent of increase in scale scores over initial scores in two years, from October, 1970, to May, 1972. (See Table 4.)

Inspection of Table 4 reveals that the projects showing the greatest percent of increase in reading scores over initial scores were San Francisco, Colton, and San Jose; projects showing the least percent of increase were Los Angeles (Pacoima), San Diego, and Los Angeles (Edison). Projects showing the highest percent of increase in mathematics scores were Colton, Los Angeles (Pacoima), and Long Beach; the lowest percent of increase was shown by Pasadena, Los Angeles (Edison), and Oakland.

4. Longitudinal achievement gains were calculated for those students in the program for three years, expressed as the sum of their average gains per month of instruction during each of the three years of the program. (See Table 5.)

Table 5 indicates that the projects with the highest annual reading gains over the three-year period were Oakland, San Francisco, and Santa Barbara; projects with the lowest annual gains were Fresno, San Diego, and Colton. Projects with the highest annual mathematics gains were Los Angeles (Pacoima), Long Beach, and Oakland; projects with the lowest gains were Riverside, San Jose, and Colton.

5. Longitudinal gains were also calculated for students in the program for three years, expressed as the average overall gains per month of instruction from the beginning of grade seven to the end of grade nine. (See Table 6.)

As shown in Table 6, the projects with the highest longitudinal three-year gains in reading were Oakland, El Monte, and San Francisco; lowest reading gains were shown by San Jose, Colton, and San Diego. Projects with the highest overall longitudinal gains in mathematics were Long Beach, Los Angeles (Pacoima), and Oakland; lowest start-to-finish gains were shown by Pasadena, San Jose, Los Angeles (Edison), and Colton.

6. Achievement gains were calculated in terms of reducing the gap between normal grade-level scores expected and mean grade-equivalent scores obtained. Achievement was expressed as the percent of reduction in the gap (between grade-level scores and mean achievement scores) over the two-year period of October, 1970, to May, 1972. (See Table 7.)

Table 7 shows that the projects which reduced the gap most between normal grade-level performance and mean reading scores were Riverside, Colton, and San Francisco; projects least successful in closing the reading gap were San Diego and Los Angeles (Pacoima and Edison). Projects which were most successful in closing the mathematics gap were Colton, Los Angeles (Pacoima), and Long Beach; least successful in closing the gap in mathematics scores were Pasadena, Los Angeles (Edison), and Oakland.

Since each of the six achievement ratings gives a slightly different emphasis to the test results obtained in reading and mathematics in the respective projects, the most equitable overall comparison was a combination of all six ratings, weighted equally. Therefore, the overall achievement rating for each project was its total rank order based on the sum of its six achievement ratings. A summary of the achievement ratings for the projects is given in Table 8.

Table 8 reveals that the projects rated highest in overall achievement in reading were San Francisco, Oakland, and El Monte. Projects rated lowest in overall reading achievement were San Diego, Los Angeles (Pacoima), and Fresno. Projects rated highest in overall mathematics achievement were Los Angeles (Pacoima), Long Beach, and Colton. Projects rated lowest in overall mathematics achievement were Pasadena, Los Angeles (Edison), and Fresno.

Cost Analysis

Cost analysis ratings were compiled for expenditures per student and cost effectiveness. Cost effectiveness was defined as the greatest increase in student achievement for the least increase in cost per student. Projects were rated separately on reading and mathematics, with the lowest costs receiving the highest rating.

Expenditures Per Student. Expenditures were summarized as reported. Costs were tabulated as of May 31, 1972, for the separate categories of: (1) operating expenses; (2) certificated salaries; (3) classified salaries; (4) research and development; and (5) total expenditures. Projects were compared and ranked in order on each category of expenditures. These rankings are presented in Tables 9 through 13.

Table 9 reveals that the projects with the least expenditures per student for operating expenses were Colton, Los Angeles (Pacoima), and Los Angeles (Edison). Projects with the greatest operating expenses were Oakland, El Monte, and San Francisco. Operating expenses for reading instruction in Oakland were 17 times those for the Colton project.

Table 10 shows that the projects reporting the lowest per-student expenses for certificated salaries were Colton, Los Angeles (Pacoima and Edison), and Riverside. Highest expenditures for certificated salaries were in El Monte, Oakland, and San Diego. The per-student expenditure for certificated salaries in the most expensive project was 24 times that of the least expensive project.

As seen in Table 11, projects with the lowest expenditures per student for classified salaries were Colton, San Diego, Riverside, and Los Angeles (Edison). Projects with the highest expenditures were Long Beach, Oakland, and Santa Barbara. Expenditures for classified salaries were generally much less than for certificated salaries (Table 10). The two mathematics projects that reported greater per-student expenditures for classified salaries than for certificated salaries were Pacoima and Long Beach--the two projects scoring highest in mathematics achievement (Table 8).

Research and development costs ranged from $5 to $365 per student. Table 12 indicates that these expenditures were lowest in Colton, San Diego, and Pasadena. They were highest in Long Beach, El Monte, and Riverside.

Table 13 summarizes the total expenditures of all the projects. Total expenses ranged from $75 per student to $1,181 per student. The least expensive demonstration projects were in Colton, Pasadena, and Los Angeles (Pacoima); the most expensive were in Oakland, San Jose, and El Monte.

Cost Effectiveness. When increases in student achievement scores are compared to expenditures per student to give a measure of cost effectiveness, two main variables must be given adequate consideration: (1) the initial level or base rate of student achievement at the beginning of the program; and (2) the initial level or base rate of expenditures already existing in the school district operating the program.

To account for these variables, cost effectiveness was operationally defined as the greatest increase in pupil achievement with the least increase in program cost, to be determined by comparing the relative increase in student achievement scores to the relative increase in operating costs.

The measure of increase in pupil achievement was the average percent of increase in CTBS expanded scale scores over expected gains between October, 1970, and May, 1972 (Table 3). The measure of increase in program costs was the percent of increase represented by comparing the project operating costs per student for 1971-72 to the current estimated district operating costs per average daily attendance. These figures are presented in Table 14.

An Index of Cost Effectiveness was determined for each project by calculating the ratio between the increase in pupil achievement and the increase in program costs. This index indicates in general what percent of increase in achievement was obtained for each 1 percent increase in costs. Cost Effectiveness Index ratings for the projects are given in Table 15.

Table 15 reveals that the most cost-effective projects were Los Angeles (Pacoima), San Diego, and Santa Barbara. The most cost-effective mathematics projects were Colton, Los Angeles (Pacoima), and San Jose; the least cost-effective projects were Pasadena, Oakland, and Fresno.

Cost effectiveness index figures show that the San Jose reading program, for example, produced a 4.5 percent increase in reading scores for every 1 percent increase in program costs. San Jose's reading index of 4.5 represents a level of cost effectiveness nearly three times as effective as San Jose's mathematics index of 1.7 and roughly nine times as effective as San Diego's index of 0.5.

Combined Rank Order Rating of Projects

Based on the analysis of data presented in Tables 8 and 15, a combined rank order rating of projects on overall effectiveness was determined. This overall rating was the average of the ratings on student achievement and cost effectiveness. In case of a tie in ratings, the project with the higher rank order in achievement was ranked higher in overall effectiveness.

The combined rank order ratings of the projects on overall effectiveness are summarized in Table 16.

Table 16 indicates that the reading projects rated highest in overall effectiveness were San Francisco, San Jose, and Colton; projects rated lowest were San Diego, Los Angeles (Pacoima), and Fresno.

Mathematics projects ranking highest in overall effectiveness were Los Angeles (Pacoima), Colton, and Long Beach; projects ranking lowest were Pasadena, Los Angeles (Edison), and Fresno.

Projects ranking highest in both student achievement and cost effectiveness were considered most effective. Projects ranking high in either student achievement or cost effectiveness were considered effective. Projects ranking lowest in both student achievement and cost effectiveness were considered least effective.

Replication Projects

Program Development

During 1971-72, their first year of operation, the five replication projects were not formally evaluated on program development. Emphasis was placed on making the programs operational and successful in terms of student achievement and cost effectiveness.

The replication programs were rated informally on the same 78-item evaluation rating scale as the original demonstration projects, assessing the extent to which they adhered to program guidelines. Projects were compared and ranked according to point scores on this questionnaire. These ratings are given in Table 17.

The replications in Long Beach and Santa Barbara were rated highest on program development. San Francisco and San Diego were rated lowest. These are only comparative ratings, however, since all of these programs were replications of projects that had been successful during 1970-71.

Waivers of Education Code Provisions

As with the original demonstration projects, the replication projects were permitted to request a waiver of any section of the Education Code necessary to implement a more innovative and exemplary program.

Two waivers were granted during 1971-72. One was granted to all the replication projects to extend the duration of their project year. The other was granted to the Santa Barbara project at La Cumbre Junior High School to allow more flexibility in the use of non-certificated personnel.

The first waiver had no direct effect upon student achievement.

The Santa Barbara replication project was granted a waiver of Education

Code sections 13251 and 13252, pertaining to the mandatory use of certificated personnel. This waiver apparently had little effect upon the reading achievement of the 465 students participating in the project. The La Cumbre project rated below the average of the replication projects in three of the four ratings on reading achievement, and ranked fourth of the five replication projects in overall achievement.

Student Achievement

Academic achievement of the students in the replication programs was measured, reported, and analyzed in the same manner as in the regular demonstration programs. The obvious exceptions were that there was no analysis of longitudinal three-year gains and that current year gains were for students in grade seven rather than those students in grade nine.

Achievement results for the replication programs were analyzed in four different ways, as follows:

1. Achievement increases were expressed in terms of months of gain in mean grade placement for each month of instruction in grade seven. (See Table 18.)

As shown in Table 18, the mean achievement gains in reading ranged from 1.3 to 4.0 months per month of instruction, with an average of 2.3 months for the four projects. Achievement gains in mathematics were from 2.3 to 2.7 months, with an average gain of 2.6 months for each month of instruction in the two projects.

2. Achievement gains obtained were compared to gains expected, expressed as the percent of scale-score increases above expected increases from pre- to post-test during 1971-72. (See Table 19.)

Table 19 shows that the mean increase in reading scores over expected gains was from 18 percent to 259 percent, with an average increase of 128

percent above expectancy. Gains in mathematics ranged from 105 percent to 200 percent above expected gains, with an average increase of 155 percent.

3. Achievement gains were expressed as the percent of increase in scale scores over initial pretest scores. (See Table 20.)

Inspection of Table 20 reveals that the average increase in reading scores over pretest level was 9 percent, with project means ranging from 5 percent to 16 percent increase. Increases in mathematics scores were from 10 to 14 percent, with an average of 12 percent.

4. Achievement gains were calculated in terms of reducing the gap between normal grade-level scores expected and mean grade-equivalent scores obtained. Achievement was expressed as the percent reduction in the gap during the school year 1971-72. (See Table 21.)

Table 21 shows that the reduction of the gap between grade-level achievement and mean achievement scores in reading ranged from 11 to 35 percent (excluding Santa Barbara), with an average reduction of 28 percent. In closing the gap in mathematics scores, success ranged from 14 to 100 percent, with an average reduction of 47 percent.

An overall achievement rating for each replication project was determined by calculating its rank order in reading and/or mathematics achievement in comparison with all of the replication projects. A summary of the overall achievement ratings for these projects is given in Table 22.

Table 22 reveals that the replication projects rated highest in overall achievement were San Francisco and Long Beach. The projects rated lowest in overall student achievement were San Diego and Santa Barbara.

Cost Analysis

Cost analysis ratings were compiled for expenditures per student and

cost effectiveness of the replication projects, using procedures identical to those used in evaluating the regular demonstration programs.

Expenditures Per Student. Expenditures were calculated for operating expenses, certificated salaries, classified salaries, research and development, and total expenditures. These figures are summarized in Table 23.

Table 23 reveals that the replication project with the lowest operating costs per student was Long Beach; the project with the highest operating costs was Oakland. Operating expenses ranged from $73 to $192 per student, with an average of $143.

The project with the least expenditures for certificated salaries was Long Beach ($28); the project with the greatest expenditures was San Diego ($115). Expenses for classified salaries ranged from $11 to $49 per student, with an average of $34. The San Diego project spent the least amount per student, while Oakland spent the most. Expenditures for classified salaries were usually much less than for certificated salaries, just as in the regular demonstration projects.

Research and development costs ranged from $18 per student in Oakland to $84 in San Francisco. The average was $47 per student.

Table 23 shows that total expenditures per student ranged from $133 to $245. The least expensive replication project was in Long Beach; the most expensive was in San Francisco.

Cost Effectiveness. An estimate of cost effectiveness was determined for each replication project in the manner described above, by comparing the relative increase in student achievement to the relative increase in operating costs. The measure of increase in achievement was the mean percent of increase in CTBS scale scores over expected gains during 1971-72. (See Table 19.)

The measure of increase in costs was the percent of increase represented by comparing project operating costs to current estimated district operating costs. These figures are given in Table 24.

An Index of Cost Effectiveness was calculated for each replication project. This index indicates in general what percent of increase in achievement was obtained for each 1 percent increase in costs. Cost effectiveness index ratings are presented in Table 25.

Table 25 reveals that the most cost-effective replication projects (in Long Beach and San Francisco) had very high index ratings of more than 24.0, while the least cost-effective projects (Santa Barbara and San Diego) had ratings of greater than 2.0. The average replication project showed a level of cost effectiveness that was twice as great as the average demonstration project in reading and seven times as great in mathematics.

Combined Rating of Replication Projects

Based on an analysis of the data in Tables 22 and 25, a combined rank order rating of the replication projects on overall effectiveness was determined. This rating was the average of the ratings on student achievement and on cost effectiveness. In case of a tie, the project with the higher rank in achievement was rated higher in overall effectiveness.

The combined rank order rating of these projects was exactly the same as their respective rank order ratings on achievement alone, as shown in Table 26.

The most effective replication projects overall were San Francisco and Long Beach, followed by Oakland, Santa Barbara, and San Diego. All five replication projects were considered very effective.

V. EVALUATION RESULTS

Original Demonstration Projects

Evaluation results reveal that the projects rated highest on program development were Santa Barbara, Colton, and Long Beach. Projects rated lowest were Los Angeles (Edison), Fresno, and Los Angeles (Pacoima).

Reading projects rated highest on overall student achievement were San Francisco, Oakland, and El Monte. Rated as least effective in reading achievement were San Diego, Los Angeles (Pacoima), and Fresno.

Mathematics projects rated highest on overall student achievement were Los Angeles (Pacoima), Long Beach, and Colton. Projects rated as least effective in mathematics achievement were Pasadena, Los Angeles (Edison), and Fresno.

Projects reporting lowest operating expenses per student were Colton and Los Angeles (Pacoima and Edison). Highest per student operating costs were recorded for Oakland, El Monte, and San Francisco.

Lowest total expenditures per student were reported by Colton, Pasadena, and Los Angeles (Pacoima). Highest expenditures were in Oakland, San Jose, and El Monte.

Reading projects rated highest on cost effectiveness were Colton, San Francisco, and San Jose. Reading projects rated as least cost effective were Los Angeles (Pacoima), San Diego, and Santa Barbara.

Mathematics projects rated highest on cost effectiveness were Colton, Los Angeles (Pacoima), and San Jose. The least cost effective mathematics projects were Pasadena, Oakland, and Fresno.

Reading projects rated highest in overall effectiveness included San Francisco, San Jose, and Colton. Those rated lowest were San Diego, Los Angeles (Pacoima), and Fresno.

Mathematics projects rated highest in overall effectiveness included Los Angeles (Pacoima), Colton, and Long Beach. Rated lowest in overall effectiveness were Pasadena, Los Angeles (Edison), and Fresno.

Seven reading and five mathematics programs were rated as most effective. They were as follows, in relative rank order:

Most Effective Reading Programs	Most Effective Mathematics Program
San Francisco (Franklin)	Los Angeles (Pacoima)
San Jose	Colton
Colton	Long Beach (Franklin)
Oakland (Hoover)	San Jose
Riverside	Riverside
El Monte	
Los Angeles (Edison)	

Four reading or mathematics programs were rated as effective. They were, in order:

Effective Reading Programs	Effective Mathematics Programs
Santa Barbara (Santa Barbara)	Oakland (Hoover)
Fresno	Los Angeles (Edison)

Four reading or mathematics programs were rated as least effective. They were, in order:

Least Effective Reading Programs	Least Effective Mathematics Programs
San Diego (Memorial)	Pasadena
Los Angeles (Pacoima)	Fresno

Replication Projects

Evaluation results reveal that the projects rated highest on program development were Long Beach and Santa Barbara. The project rated lowest was San Francisco.

The replication projects rated highest on overall student achievement were San Francisco and Long Beach. The least effective replication project was San Diego.

The replication project with the lowest operating expenses per student was Long Beach; highest operating expenses were recorded for Oakland.

Lowest total expenditures per student were reported by Long Beach; highest expenditures were in San Francisco.

Replication projects rated highest on cost effectiveness were Long Beach and San Francisco; the project rated as least cost effective was Santa Barbara.

Replication projects rated highest in overall effectiveness included San Francisco and Long Beach; rated lowest was San Diego.

All five replication programs were rated as very effective. In relative rank order they are as follows:

Replication Programs	Instruction
San Francisco (Pelton)	Reading
Long Beach (Lindbergh)	Mathematics
Oakland (Wilson)	Reading/Mathematics
Santa Barbara (La Cumbre)	Reading
San Diego (Gompers)	Reading

Recommendations for Demonstration Programs

On the basis of these evaluations, it is recommended that: (1) the most effective demonstration programs and all replication programs should be

retained, extended, and commended; (2) effective programs should be retained, improved, and strengthened; and (3) the least effective program should be terminated.

APPENDIX A

STATISTICAL DATA

TABLE 1

Rating of Demonstration Projects on Program Development, Spring, 1972

Project	Rating scale point scores, by component (Perfect score: 100 points each)				Average point score	Relative rank order
	I Organization and administration	II Program development	III Evaluation and research	IV Fiscal management		
Colton	89	84	86	96	89	2
El Monte	79	98	87	73	84	4
Fresno	69	65	58	56	62	12
Long Beach	84	96	87	73	85	3
Los Angeles:						
Edison	64	29	80	63	59	13
Pacoima	55	57	75	67	64	11
Oakland	77	98	82	70	82	5
Pasadena	69	66	82	53	68	10
Riverside	85	96	81	58	80	6
San Diego	77	75	85	65	76	8
San Francisco	63	77	81	71	73	9
San Jose	82	88	87	63	80	7
Santa Barbara	85	98	92	94	92	1

TABLE 2

Rank Order of Demonstration Projects on Mean Achievement Gains, Grade Nine, 1971-72

Reading achievement			Mathematics achievement		
Rank	Project	Gains*	Rank	Project	Gains*
1	San Francisco	3.7	1	L.A. (Pacoima)	2.4
2	Oakland	1.9	2	Long Beach	1.7
3	San Jose	1.8	3	L.A. (Edison)	1.4
4	L.A. (Edison)	1.7	5	Oakland	1.0
5	L.A. (Pacoima)	1.6	5	San Jose	1.0
6	El Monte	1.4	5	Fresno	1.0
7	Riverside	1.3	7	Riverside	0.9
8	San Diego	1.2	8	Pasadena	0.8
9.5	Santa Barbara	1.0	9	Colton	0.6
9.5	Fresno	1.0			
11	Colton	0.6			
	Average months of gain per months of instruction	1.6		Average months of gain per months of instruction	1.2

*Gains: Number of months of CTBS grade equivalent gains reported per month of instruction

TABLE 3

Rank Order of Demonstration Projects on Increase in Achievement Scores over Expected Gains, 1970-72

Reading achievement			Mathematics achievement		
Rank	Project	Percent increase*	Rank	Project	Percent increase*
1	San Francisco	206	1	L.A. (Pacoima)	66
2	San Jose	119	2	Colton	60
3	Colton	102	3	Long Beach	58
4	Oakland	90	4	San Jose	44
5	El Monte	86	5	Riverside	29
6	Fresno	57	6	Oakland	27
7	Riverside	54	7	Fresno	24
8	L.A. (Edison)	43	8	L.A. (Edison)	21
9	Santa Barbara	25	9	Pasadena	-23 (Decrease)
10	San Diego	20			
11	L.A. (Pacoima)	3			
	Average percent increase	73 percent		Average percent increase	34 percent

*Average percent increase in CTBS scale scores above expected gains between October, 1970, and May, 1972

TABLE 4

Rank Order of Demonstration Projects on Increase in Achievement Scores over Initial Pretest Scores, 1970-72

Reading achievement			Mathematics achievement		
Rank	Project	Percent increase*	Rank	Project	Percent increase*
1	San Francisco	25	1	Colton	16
2	Colton	20	2	L.A. (Pacoima)	16
3	San Jose	18	3	Long Beach	15
4	Oakland	17	4	Riverside	14
5	El Monte	16	5	San Jose	13
6	Riverside	15	6	Fresno	12
7	Fresno	13	7	Oakland	12
8	Santa Barbara	13	8	L.A. (Edison)	11
9	L.A. (Edison)	11	9	Pasadena	9
10	San Diego	11			
11	L.A. (Pacoima)	10			
	Average percent increase	15 percent		Average percent increase	13 percent

*Average percent increase in CTBS expanded scale scores over initial pretest scores between October, 1970, and May, 1972

TABLE 5

Rank Order of Demonstration Projects on Annual Longitudinal Gains During Three Years, 1969-72

Reading achievement				Mathematics achievement			
Rank	Project	No. of students	Annual gains*	Rank	Project	No. of students	Annual gains*
1	Oakland	91	2.9	1	L.A. (Pacoima)**	501	2.3
2	San Francisco	131	2.2	2	Long Beach**	93	1.8
3	Santa Barbara	391	1.8	3	Oakland	73	1.6
4	El Monte**	68	1.7	4	L.A. (Edison)**	406	1.3
5	San Jose	100	1.7	5	Pasadena	18	1.3
6	L.A. (Edison)**	396	1.7	6	Fresno	160	1.1
7	Riverside	146	1.4	7.5	Colton	219	1.1
8	L.A. (Pacoima)**	494	1.4	7.5	San Jose	99	1.1
9	Colton	219	1.4	9	Riverside	146	1.1
10	San Diego	114	1.2				
11	Fresno	160	0.9				
	Average months of gain per months of instruction		1.7		Average months of gain per months of instruction		1.4

*Average number of months of CTBS grade equivalent gains per month of instruction during each year of the program

**Estimate based on available data

TABLE 6

Rank Order of Demonstration Projects on Overall Longitudinal Gains over Three Years, 1969-72

Reading achievement			Mathematics achievement		
Rank	Project	Overall gains*	Rank	Project	Overall gains*
1	Oakland	2.2	1	Long Beach**	1.3
2	El Monte**	1.8	2	L.A. (Pacoima)**	1.3
3	San Francisco	1.7	3	Oakland	1.2
4	Riverside	1.2	4	Riverside	0.9
5	Santa Barbara	1.0	5	Fresno	0.8
6	L.A. (Edison)**	1.0	6.5	Colton	0.7
7	L.A. (Pacoima)**	0.9	6.5	L.A. (Edison)**	0.7
8	Fresno	0.7	8	San Jose	0.2
9	San Diego	0.7	9	Pasadena	0.2
10	Colton	0.7			
11	San Jose	0.6			
Average months of gain per months of instruction		1.1	Average months of gain per months of instruction		0.8

*Average months of CTBS grade equivalent gains per month of instruction from start of grade seven to the end of grade nine

**Estimate based on available data

TABLE 7

Rank Order of Demonstration Projects in Reducing the Gap Between Grade-Level Achievement and Mean Achievement Scores Obtained, 1970-72

Reading achievement			Mathematics achievement		
Rank	Project	Percent reduction*	Rank	Project	Percent reduction*
1	Riverside	75	1	Colton	33
2	Colton	71	2	L.A. (Pacoima)	31
3	San Francisco	53	3	Long Beach	23
4	Santa Barbara	50	4	Riverside	11
5	El Monte	37	5	San Jose	0
6	San Jose	23	6	Fresno	4 (Increase)
7	Oakland	22	7	Oakland	5 (Increase)
8	Fresno	0	8	L.A. (Edison)	15 (Increase)
9	L.A. (Edison)	7 (Increase)	9	Pasadena	80 (Increase)
10.5	L.A. (Pacoima)	13 (Increase)			
10.5	San Diego	13 (Increase)			
Average percent reduction in grade equivalent scores		19 percent	Average percent reduction in grade equivalent scores		6 percent

*Percent reduction (in CTBS grade equivalent scores in months of achievement) between grade-level achievement expected and average achievement scores obtained, October, 1970, to May, 1972

TABLE 8

Summary of Achievement Ratings, Demonstration Projects, Spring, 1972

Project	Reading rank order								Mathematics rank order							
	Achievement ratings						Sum of ratings	Overall rank order	Achievement ratings						Sum of ratings	Overall rank order
	Tables*								Tables*							
	2	3	4	5	6	7			2	3	4	5	6	7		
Colton	11	3	2	9	10	2	37	6	9	2	1	7.5	6.5	1	27	3
El Monte	6	5	5	4	2	5	27	3	-	-	-	-	-	-	-	-
Fresno	9.5	6	7	11	8	8	49.5	9**	5	7	6	6	5	6	35	7**
Long Beach	-	-	-	-	-	-	-	-	2	3	3	2	1	3	14	2
L.A. (Edison)	4	8	9	6	6	9	42	8	3	8	8	4	6.5	8	37.5	8**
L.A. (Pacoima)	5	11	11	8	7	10.5	52.5	10**	1	1	2	1	2	2	9	1
Oakland	2	4	4	1	1	7	19	2	5	6	7	3	3	7	31	4
Pasadena	-	-	-	-	-	-	-	-	8	9	9	5	9	9	49	9**
Riverside	7	7	6	7	4	1	32	5	7	5	4	9	4	4	33	5
San Diego	8	10	10	10	9	10.5	57.5	11**	-	-	-	-	-	-	-	-
San Francisco	1	1	1	2	3	3	11	1	-	-	-	-	-	-	-	-
San Jose	3	2	3	5	11	6	30	4	5	4	5	7.5	8	5	34.5	6
Santa Barbara	9.5	9	8	3	5	4	38.5	7	-	-	-	-	-	-	-	-

*Information listed is from previous tables
**Least effective projects

TABLE 9

Rank Order of Demonstration Projects on Expenditures per Student for Operating Expenses, May 31, 1972

Reading projects			Mathematics projects		
Rank	Project	Amount	Rank	Project	Amount
1	Colton	$ 32	1	Colton	$ 57
2	L.A. (Pacoima)	122	2	L.A. (Pacoima)	122
3	L.A. (Edison)	147	3	L.A. (Edison)	147
4	Riverside	182	4	Pasadena	178
5	San Jose	269	5	Riverside	182
6	Fresno	287	6	Fresno	229
7	San Diego	364	7	San Jose	264
8	Santa Barbara	481	8	Long Beach	381
9	San Francisco	497	9	Oakland	539
10	El Monte	516			
11	Oakland	553			
	Average	$314		Average	$233

TABLE 10

Rank Order of Demonstration Projects on Expenditures per Student for Certificated Salaries, May 31, 1972

Reading projects			Mathematics projects		
Rank	Project	Amount	Rank	Project	Amount
1	Colton	$ 16	1	Colton	$ 25
2	L.A. (Pacoima)	48	2	L.A. (Pacoima)	48
3	Riverside	56	3	L.A. (Edison)	67
4	L.A. (Edison)	67	4	Riverside	70
5	San Jose	153	5	Pasadena	74
6	Fresno	177	6	Long Beach	102
7	San Francisco	227	7	Fresno	138
8	Santa Barbara	228	8	San Jose	153
9	San Diego	308	9	Oakland	332
10	Oakland	345			
11	El Monte	386			
	Average	$183		Average	$112

TABLE 11

Rank Order of Demonstration Projects on Expenditures per Student for Classified Salaries, May 31, 1972

Reading projects			Mathematics projects		
Rank	Project	Amount	Rank	Project	Amount
1	Colton	$ 6	1	Colton	$ 16
2	San Diego	37	2	L.A. (Edison)	51
3	Riverside	50	3	L.A. (Pacoima)	52
4	L.A. (Edison)	51	4	San Jose	56
5	L.A. (Pacoima)	52	5	Riverside	57
6	El Monte	54	6	Pasadena	61
7	San Jose	56	7	Fresno	65
8	Fresno	77	8	Oakland	169
9	San Francisco	115	9	Long Beach	209
10	Santa Barbara	134			
11	Oakland	169			
	Average	$ 73		Average	$ 82

TABLE 12

Rank Order of Demonstration Projects on Expenditures per Student for Research and Development, May 31, 1972

Reading projects			Mathematics projects		
Rank	Project	Amount	Rank	Project	Amount
1	Colton	$ 5	1	Colton	$ 12
2	San Diego	15	2	Pasadena	22
3	L.A. (Edison)	29	3	L.A. (Edison)	34
4	L.A. (Pacoima)	40	4	Fresno	39
5	Oakland	45	5	L.A. (Pacoima)	41
6	Santa Barbara	46	6	Oakland	45
7	Fresno	49	7	San Jose	110
8	San Francisco	107	8	Riverside	167
9	San Jose	110	9	Long Beach	365
10	Riverside	138			
11	El Monte	319			
	Average	$ 82		Average	$ 93

TABLE 13

Rank Order of Demonstration Projects on Total Expenditures per Student, May 31, 1972

Project	Amount	Rank order of projects		
		Reading	Mathematics	All projects
Colton	$ 75	1	1	1
Pasadena	199	-	2	2
L.A. (Pacoima)	325	2	3	3
L.A. (Edison)	356	3	4	4
San Diego	379	4	-	5
Santa Barbara	527	5	-	6
Fresno	604	6	5	7
San Francisco	604	7	-	8
Riverside	668	8	6	9
Long Beach	746	-	7	10
El Monte	834	9	-	11
San Jose	1,122	10	8	12
Oakland	1,181	11	9	13
Average	$ 586			

TABLE 14

Demonstration Project Operating Costs per Student Compared to District Operating Costs per A.D.A., 1971-72

Project	Project operating cost per student		District operating costs per a.d.a.* (Estimate for 1971-72)	Percent increase in cost over district costs	
	Reading	Mathematics		Reading	Mathematics
Colton	$ 32	$ 57	$ 780	4.2	7.3
El Monte	516	-	984	52.4	-
Fresno	287	229	831	34.5	27.5
Long Beach	-	381	917	-	41.5
L.A. (Edison)	147	147	841	17.4	17.4
L.A. (Pacoima)	122	122	841	14.5	14.5
Oakland	553	539	1,136	48.7	47.4
Pasadena	-	178	1,189	-	14.9
Riverside	182	182	819	22.3	22.2
San Diego	364	-	859	42.4	-
San Francisco	497	-	1,617	30.7	-
San Jose	269	264	1,016	26.5	26.0
Santa Barbara	481	-	1,198	40.2	-

*Source: Annual fiscal reports, 1970-71, (district reports to the Bureau of Fiscal Management and the California State Testing Program 1970-71, Sacramento, California, State Department of Education, 1972) adjusted by Statewide Testing Program district data for 1969-70 and 1970-71

TABLE 15

Cost Effectiveness (C/E) Index Ratings and Rank Order of Demonstration Projects on Cost Effectiveness, Spring, 1972

Project	Reading projects				Mathematics projects			
	Achievement percent increase	Percent increase in costs	C/E index	Rank	Achievement percent increase	Percent increase in costs	C/E index	Rank
Colton	102	4	24.6	1	60	7	8.2	1
El Monte	86	52	1.6	8	-	-	-	-
Fresno	57	35	1.7	7	24	28	0.9	7*
Long Beach	-	-	-	-	58	42	1.4	4
L.A. (Edison)	43	17	2.5	4	21	17	1.2	6
L.A. (Pacoima)	2	15	0.1	11*	66	15	4.6	2
Oakland	90	49	1.9	6	27	47	0.6	8*
Pasadena	-	-	-	-	-23	15	-1.5	9*
Riverside	54	22	2.4	5	29	22	1.3	5
San Diego	20	42	0.5	10*	-	-	-	-
San Francisco	206	31	6.7	2	-	-	-	-
San Jose	119	26	4.5	3	44	26	1.7	3
Santa Barbara	25	40	0.6	9*	-	-	-	-
Averages	Reading C/E Index: 4.3				Mathematics C/E Index: 2.0			

*Least cost-effective projects

TABLE 16

Rank Order Rating of Demonstration Projects on Overall Effectiveness, July, 1972

Project	Reading projects			Mathematics projects		
	Rank order in student achievement	Rank order in cost effectiveness	Rank order in overall effectiveness	Rank order in student achievement	Rank order in cost effectiveness	Rank order in overall effectiveness
Colton	6	1	3	3	1	2
El Monte	3	8	6	-	-	-
Fresno	9*	7	9	7*	7*	7*
Long Beach	-	-	-	2	4	3
L.A. (Edison)	8	4	7	8*	6	8
L.A. (Pacoima)	10*	11*	10*	1	2	1
Oakland	2	6	4	4	8*	6
Pasadena	-	-	-	9*	9*	9*
Riverside	5	5	5	5	5	5
San Diego	11*	10*	11*	-	-	-
San Francisco	1	2	1	-	-	-
San Jose	4	3	2	6	3	4
Santa Barbara	7	9*	8	-	-	-

*Least effective projects

TABLE 17

Rating of Replication Projects on Program Development, Spring, 1972

Project	Rating scale point scores, by component (Perfect score: 100 points each)				Average point score	Relative rank order
	I Organization and administration	II Program development	III Evaluation and research	IV Fiscal management		
Long Beach	88	97	83	96	91	1
Oakland	70	100	73	91	84	3
San Diego	73	81	72	67	73	4
San Francisco	68	67	83	71	72	5
Santa Barbara	89	96	83	82	88	2

TABLE 18

Mean Achievement Gains Shown by Grade Seven Replication Projects during 1971-72

Reading achievement			Mathematics achievement		
Rank	Project	Gains*	Rank	Project	Gains*
1	Oakland	4.0	1	Long Beach	2.7
2	San Francisco	2.8	2	Oakland	2.3
3	Santa Barbara	1.7			
4	San Diego	1.3			
	Weighted average	2.3		Weighted average	2.6

*Gains: Number of months of CTBS grade equivalent gains reported per month of instruction

TABLE 19

Mean Increase in Achievement Scores over Expected Gains
Shown by Replication Projects, 1971-72

Reading			Mathematics		
Rank	Project	Percent increase*	Rank	Project	Percent increase*
1	San Francisco	259	1	Long Beach	200
2	Oakland	206	2	Oakland	105
3	San Diego	100			
4	Santa Barbara	18			
	Weighted average	128		Weighted average	155

*Average percent increase in CTBS scale scores above expected gains between pre- and post-test

TABLE 20

Mean Increase in Achievement Scores over Initial Pretest Scores in Replication Projects, 1971-72

Reading			Mathematics		
Rank	Project	Percent increase*	Rank	Project	Percent increase*
1	San Francisco	16	1	Long Beach	14
2	Oakland	12	2	Oakland	10
3	San Diego	7			
4	Santa Barbara	5			
	Weighted average	9		Weighted average	12

*Average percent increase in CTBS expanded scale scores on post-test over initial pretest scores, during the school year

TABLE 21

Reduction in the Gap Between Grade-Level Achievement and Mean Achievement Scores Obtained in Replication Projects, 1971-72

Reading			Mathematics		
Rank	Project	Percent reduction*	Rank	Project	Percent reduction*
1	Santa Barbara	67**	1	Long Beach	100
2	Oakland	35	2	Oakland	14
3	San Francisco	24			
4	San Diego	11			
Average percent reduction in grade equivalent scores		28	Average percent reduction in grade equivalent scores		47

*Percent reduction (in CTBS grade equivalent scores in months of achievement) between grade-level achievement expected and mean achievement scores obtained during 1971-72

**In Santa Barbara, there was no reduction; there was an increase in the gap above grade level. The students were three months above grade level in October, 1971, and five months above grade level in May, 1972 (prorated).

TABLE 22

Summary of Achievement Ratings, Replication Projects
Spring, 1972

Project	Reading rank order						Mathematics rank order						Overall rank order (N=5)
	Achievement ratings				Sum of ratings	Reading rank order	Achievement ratings				Sum of ratings	Mathematics rank order	
	Tables*						Tables*						
	18	19	20	21			18	19	20	21			
San Francisco	2	1	1	3	7	1.5	-	-	-	-	-	-	1
Long Beach	-	-	-	-	-	-	1	1	1	1	4	1	2
Oakland	1	2	2	2	7	1.5	2	2	2	2	8	2	3
Santa Barbara	3	4	4	1	12	3	-	-	-	-	-	-	4
San Diego	4	3	3	4	14	4	-	-	-	-	-	-	5

*Information listed is from previous tables

TABLE 23

Replication Project Expenditures per Student, 1971-72

Project	Instruction: reading or mathematics	Expenditures per student				
		Operating costs	Certificated salaries	Classified salaries	Research and development	Total expenditures
Long Beach	Mathematics	$ 73	$ 28	$36	$60	$ 133
San Francisco	Reading	170	56	45	84	254
Oakland	Reading	159	85	45	18	193
Oakland	Mathematics	192	106	49	18	193
San Diego	Reading	153	115	11	23	176
Santa Barbara	Reading	112	60	18	78	189
Averages		$143	$ 75	$34	$47	$ 190

TABLE 24

Replication Project Operating Costs per Student Compared to District Operating Costs per A.D.A., 1971-72

Project	Instruction	Project operating costs per student	District operating costs per a.d.a.*	Percent increase in project costs over district
Long Beach	Mathematics	$ 73	$ 917	7.9
San Francisco	Reading	170	1,617	10.5
Oakland	Reading	159	1,136	14.0
Oakland	Mathematics	192	1,136	16.9
San Diego	Reading	153	859	17.8
Santa Barbara	Reading	112	1,198	9.3
Averages		$143	$1,144	12.7 percent

*Source: Annual fiscal reports, 1970-71 (district reports to the Bureau of Fiscal Management and the California State Testing Program 1970-71, Sacramento, California, State Department of Education, 1972) adjusted by Statewide Testing Program district data for 1969-70 and 1970-71

TABLE 25

Cost Effectiveness (C/E) Ratings of Replication Projects, 1971-72

Project	Percent increase in achievement	Percent increase in costs	Cost effectiveness index	Rank order		Overall rank order
				Reading projects	Mathematics projects	
Long Beach (Mathematics)	200	8	25.2	-	1	1
San Francisco (Reading)	259	11	24.6	1	-	2
Oakland (Reading)	206	14	14.7	2	-	3
(Mathematics)	105	17	6.2	-	2	
San Diego (Reading)	100	18	5.6	3	-	4
Santa Barbara (Reading)	18	9	2.0	4	-	5
Averages	Reading C/E Index: 11.7			Mathematics C/E Index: 15.7		

TABLE 26

Rating of Replication Projects on Overall Effectiveness, 1971-72

Project	Rank order in student achievement	Rank order in cost effectiveness	Rank order in overall effectiveness
San Francisco (Reading)	1	2	1
Long Beach (Mathematics)	2	1	2
Oakland (Reading/Mathematics)	3	3	3
Santa Barbara (Reading)	4	5	4
San Diego (Reading)	5	4	5

APPENDIX B

EDUCATION CODE SECTIONS ON THE SUBJECT OF DEMONSTRATION PROGRAMS

Legislative Intent

6490. It is the intent and purpose of the Legislature that exemplary programs be established for intensive instruction in reading and mathematics to serve as demonstration projects aimed solely at developing, within pupils, above-average competence in these basic skill subjects. The program shall be developed to serve pupils in grade 7, 8, or 9 who attend school in designated areas of disadvantage, and who otherwise would find difficulty in achieving complete success in high school.

It is the further intent of the Legislature that these programs in intensive instruction in reading and mathematics be operated by school districts directly, or by school districts through contract for partial or complete operation with any competent public or private agency, foundation or corporation. It is also the intent of the Legislature that authority be granted to permit the waiver of any provision of the Education Code by the program approving agency, if such is necessary for the development of model demonstration programs in the intensive instruction in reading and mathematics.

(Amended by Stats. 1969, Ch. 1596. Effective until 91st day after adjournment of 1972 Regular Session.)

Administration and Apportionment of Funds

6491. From the funds appropriated therefor by the Legislature to the Department of Education for the purposes of this article, the Superintendent of Public Instruction, upon recommendation of the Director of Compensatory Education, with the approval of the State Board of Education, shall administer this article and make apportionments to school districts to meet the total approved expense of the school districts incurred in establishing demonstration programs in the intensive instruction in reading and mathematics for pupils in grades 7, 8, or 9.

(Amended by Stats. 1969, Ch. 1596. Effective until 91st day after adjournment of 1972 Regular Session.)

Application for Program by District

6492. The governing board of any district which maintains grades 7, 8, or 9 on account of any school or schools located in any area designated by the Director of Compensatory Education pursuant to the provisions of Education Code Section 6482, may make application to establish and operate a program under this article. The application shall be in the form and shall contain such data and information as the director shall specify.

(Amended by Stats. 1969, Ch. 1596. Effective until 91st day after adjournment of 1972 Regular Session.)

Waiver of Provisions of this Code

6493. The governing board of a school district, in its application, may request waiver of the provisions of any section or sections of this code for any compensatory education program if such waiver is necessary to establish and operate a program for low-income children. The need for a waiver shall be explained and justified in the application. The Superintendent of Public Instruction, at the discretion and upon recommendation of the Director of Compensatory Education, with the approval of the State Board of Education, may grant, in whole, or in part, any such request.

(Amended by Stats. 1970, Ch. 1050. Effective until 91st day after adjournment of 1972 Regular Session.)

Operation of Programs

6494. The governing board of the school district may make application to establish and operate a demonstration program under this article directly, or may make application to provide for partial or complete operation of such a program through a contract with any competent public or private agency, foundation or corporation.

(Added by Stats. 1966 (1st Ex. Sess.), Ch. 106. Effective until 91st day after adjournment of 1972 Regular Session.)

Standards and Criteria by State Board of Education

6495. The State Board of Education shall adopt regulations setting forth the standards and criteria to be used in the evaluation of applications submitted by school districts. The standards and criteria adopted by the State Board of Education, among other items, shall include a statement of specific goals to be sought in the program both in terms of pupil achievement and for the purpose of establishing a model program, and the requirements for evaluation of the program.

Projects shall be approved only if it can be shown that, if successful, the cost effectiveness of the project will be such as to be adaptable within the budgets of other similar school districts throughout the state.

Projects shall be continually reviewed regarding their effectiveness in improving the achievement levels of pupils in reading and mathematics. Projects which are least cost effective shall be terminated and shall be replaced with ones of proven effectiveness or by new projects which hold promise of increased effectiveness.

(Amended by Stats. 1969, Ch. 1596. Effective until 91st day after adjournment of 1972 Regular Session.)

Certification of and Amount of Apportionment

6496. Upon approval by the State Board of Education of an application under this article, the Superintendent of Public

Instruction shall certify the amount to be apportioned to the applicant school district.

(Added by Stats. 1966 (1st Ex. Sess.), Ch. 106. Effective until 91st day after adjournment of 1972 Regular Session.)

Evaluation Report

6497. No later than the fifth legislative day of each regular session of the Legislature, the Superintendent of Public Instruction, upon recommendation of the Director of Compensatory Education, with approval of the State Board of Education, shall submit a report to the Legislature on the implementation and evaluation of demonstration programs under this article, including the achievement of pupils, an analysis of the costs of each project detailed in terms of the costs of design, implementation and continuing operational expenses, including the degree of cost effectiveness of each project. The report shall also include recommendations concerning improvement, retention, extension or other aspects of the program.

The report shall also set forth the number of waivers authorized by the Superintendent of Public Instruction under Section 6493, the number of pupils who participated in programs for which waivers were granted, and whether or not the waivers had a positive effect upon the reading or mathematics skill of participating pupils.

(Amended by Stats. 1970, Ch. 1050. Effective until 91st day after adjournment of 1972 Regular Session.)

Termination of Effect of This Article

6498. This article shall have no force or effect after the 91st day following the adjournment of the 1972 Regular Session of the Legislature.

(Amended by Stats. 1969, Ch. [illegible]. Effective until 91st day after adjournment of 1972 Regular Session.)

72-87 DE 3799 3-73 500